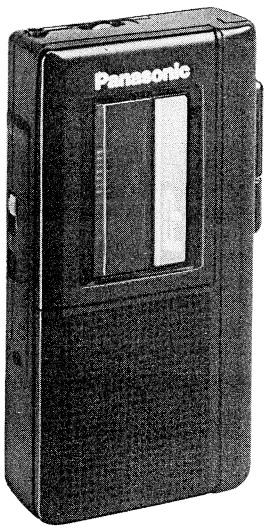
ORDER NO. AD9010286C8

Service Manual

Microcassette

Microcassette™ Recorder

RN-102



Color

(K)	Black Type

Area

Country Code	Areas	Color
(E)	Continental Europe	(K)
(GC)	Third Region	
(GN)	Oceania	

RN-105 MECHANISM SERIES (MZ20)

SPECIFICATIONS

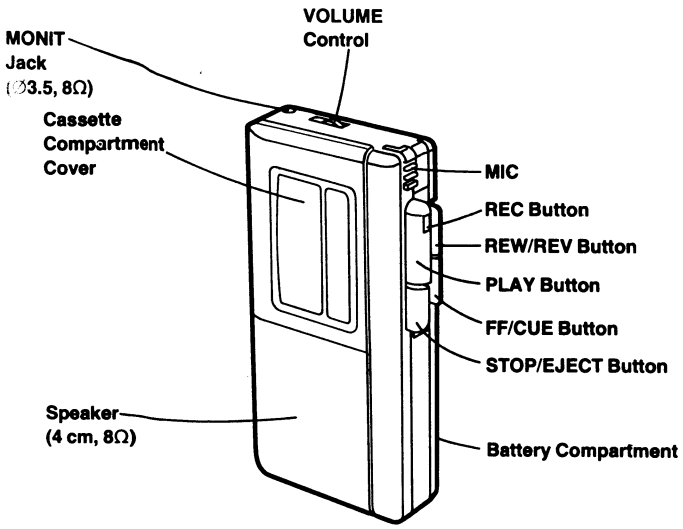
Power Requirement:	Battery; 3 V (Two R6/LR6, UM-3 batteries) (E) ..... AC; 220 V, 50 Hz with optional Panasonic AC adaptor RD-9443HS (For UK, 240 V, 50 Hz with optional Panasonic AC adaptor RD-9443H E) (GC) (GN) .. AC; 110~127/220~240 V, 50/60 Hz with optional Panasonic AC adaptor RD-9443H
Power Output:	300 mW RMS (Max.)
Frequency Range:	540~3400 Hz (at "2.4 cm/s" speed)
Program Time:	1 hour with RT-60MC microcassette tape (at "2.4 cm/s" speed) 2 hours with RT-60MC microcassette tape (at "1.2 cm/s" speed)
Track System:	2-track monaural recording and playback
Tape Speed:	2.4 cm/s 1.2 cm/s
Jacks:	
Input;	DC IN; 3 V (Sub mini type)
Output;	MONITOR; 8Ω, Ø3.5
Speaker:	4 cm PM dynamic speaker, 8Ω
Dimensions:	
(W×H×D)	60×117×23.7 mm
Weight:	135 g without batteries

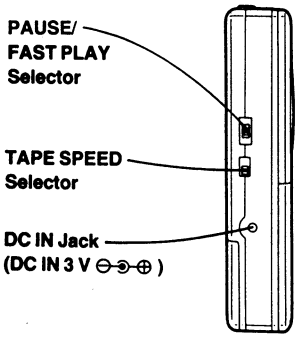
Notes:

1. Weights and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

Panasonic

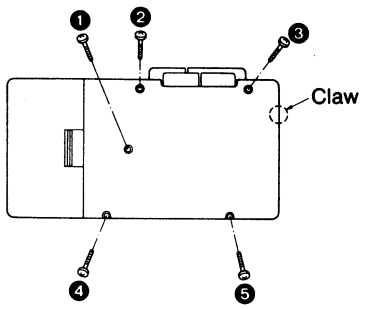
LOCATION OF CONTROLS



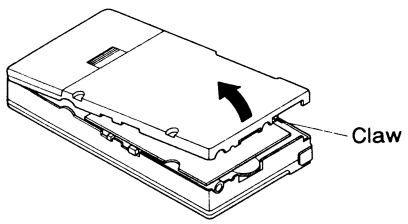


DISASSEMBLY INSTRUCTIONS

Ref. No. 1	Removal of the Rear Cabinet
Procedure 1	

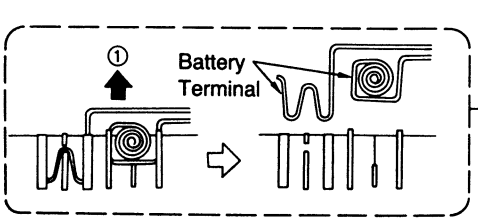


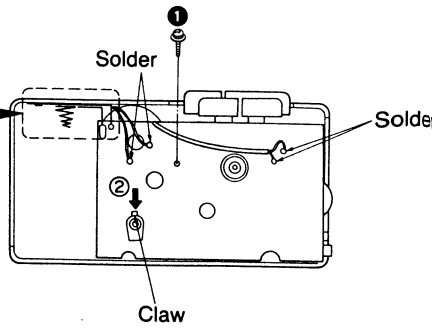
1. Remove 5 screws (❶~❺).
2. Release the claw.



3. Remove the rear cabinet in the direction of the arrows.

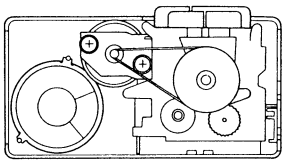
Ref. No. 2	Removal of the P.C.B.
Procedure 1→2	





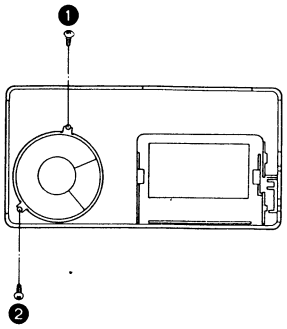
1. Remove the screw (❶).
2. Remove 4 solder point.
3. Release 2 battery terminals.
4. Release the claw.

Ref. No. 3	Removal of the Mechanism
Procedure 1→2→3	



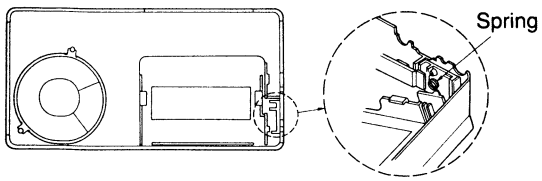
1. Pull out the mechanism.

Ref. No. 4	Removal of the Speaker
Procedure 1→2→3→4	

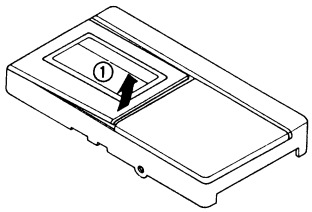


●Remove 2 screws (❶, ❷).

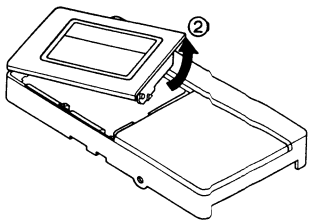
Ref. No. 5	Removal of the Cassette Compartment Cover
Procedure 1→2→3→5	



1. Remove the spring.



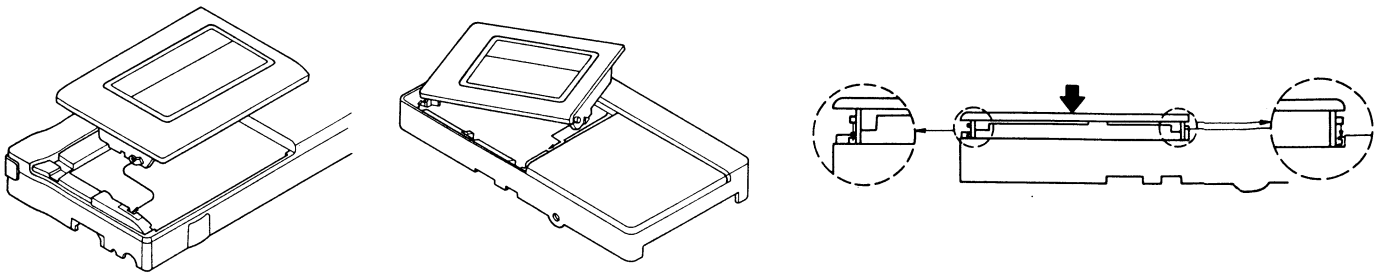
2. Pull up the cassette compartment cover in the direction of arrow ①.



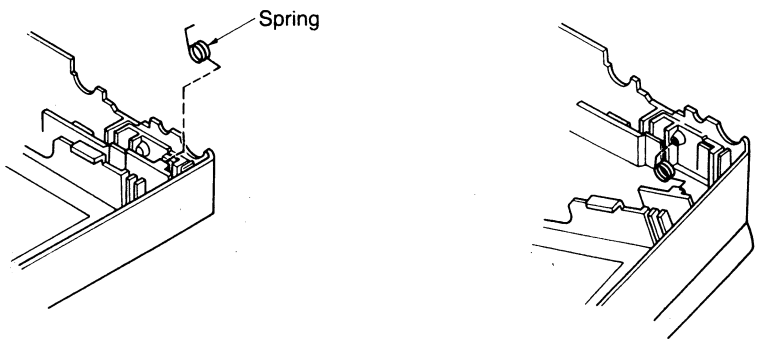
3. Remove the cassette compartment cover in the direction of arrow ②.

■ REASSEMBLY PROCEDURES

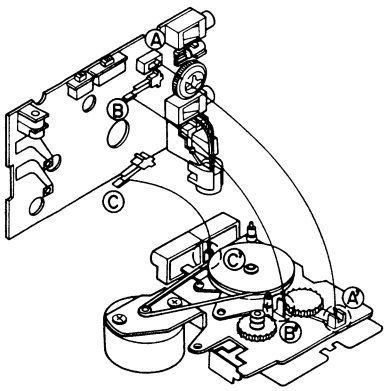
●How to install the cassette compartment cover.



●How to install the cassette compartment cover spring.

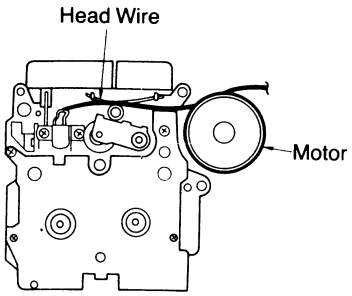


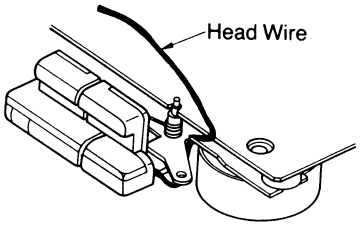
●How to install the P.C.B.



Install the P.C.B. in the mechanism unit so that positions Ⓐ, Ⓑ and Ⓒ match with positions Ⓐ Ⓑ and Ⓒ respectively.

■ ARRANGEMENT OF THE HEAD WIRE





MEASUREMENT AND ADJUSTMENT METHODS

NOTES: Make sure the unit is in good working order before attempting measurements and adjustments.
Set the switches and controls to the positions as specified for this procedure.

- ●Make sure heads are clean.
- ●Make sure capstan and pinch roller are clean.
- ●Suggested room temperature for this procedure.
- ●Volume control: Maximum
- ●Tape speed select switch: 2.4 cm/s or 1.2 cm/s

ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ **Head Azimuth Adjustment** Condition: ●Playback mode Equipment: ●Test tape ...QZZMAA	1. Assemble the mechanism and cabinet parts completely. 2. Play back the head azimuth adjusting tape (2.4 cm/s, 4 kHz...QZZMAA). 3. Adjust the azimuth adjusting screw (Refer to Fig. 2) of Record/Playback head to obtain the maximum monitor output. 4. After adjusting, repeat PLAY and STOP some times and confirm that the output variation is less than the specified level (within 3 dB).
Ⓑ **Tape speed adjustment** Condition: ●Playback mode Equipment: ●DC power supply ●Digital electronic counter ●Test tape ...QZZMWA for 2.4 cm/s ...QZZMWBL for 1.2 cm/s	1. Test equipment connection is shown in fig. 1. 2. Apply 3 V to DC IN. 3. Connect the monitor output (8Ω) to the counter. 4. Playback the tape speed adjusting tape (for 2.4 cm/s 3 kHz, QZZMWA, for 1.2 cm/s QZZMWBL). 5. Measure this frequency. **Standard value: 3000±20 Hz (2.4 cm/s), 3000±80 Hz (1.2 cm/s).** 6. If measured value is not within standard, adjust as follows. ●Tape speed adjustment 1. Insert test tape QZZMWA. 2. Set tape speed selector switch S5 to 2.4 cm/s. 3. Adjust VR201 so that the output frequency reaches 3000±20 Hz. (Refer to Fig. 3.) 4. Insert test tape QZZMWBL. 5. Set tape speed selector switch S5 to 1.2 cm/s. 6. Make sure the output frequency is 3000 ± 80 Hz. If not, adjust it again.

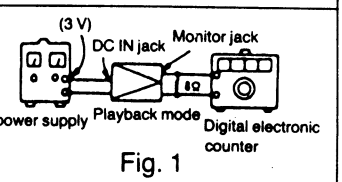


Fig. 1

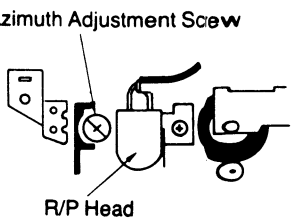


Fig. 2

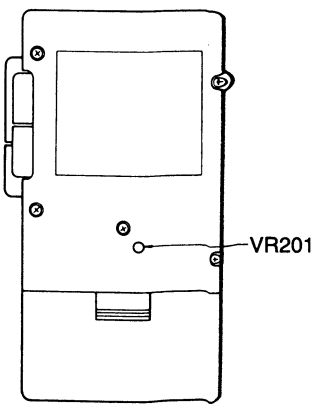
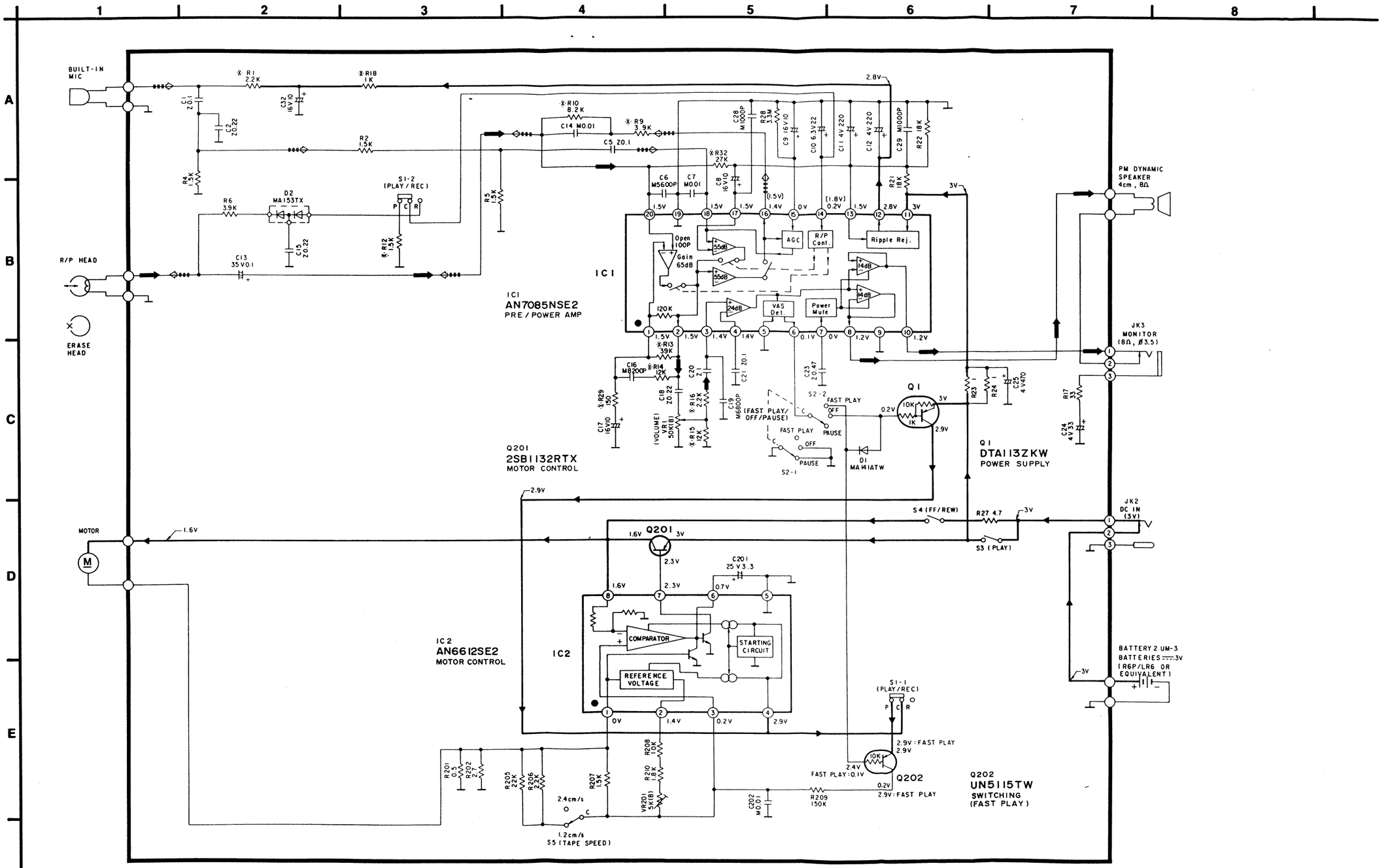


Fig. 3

SCHEMATIC DIAGRAM



Notes:

- ●S1-1, S1-2: Record/Playback switch in "PLAYBACK" position. (P...PLAYBACK, R...RECORD)
- ●S2-1, S2-2: PAUSE/FAST PLAY switch in "PAUSE" position.
- ●S3: Play switch in "OFF" position.
- ●S4: FF/REW switch in "OFF" position.
- ●S5: Tape speed select switch in "1.2 cm/s" position.
- ●VR1: Volume control VR.
- ●VR201: Tape speed adjustment VR.
- ●DC voltage measurement are taken with electronic voltmeter from negative terminal of battery.
  No mark .... Playback, [ ] ..... Record
- ●Battery current: Playback .... 114 mA (Vol. min)
  262 mA (Vol. max)
  Record ..... 118 mA
- ●※mark: Printed Resistor

●This schematic diagram may be modified at any time with the development of new technology.

: Playback Signal Line
: Record Signal Line
: +B Line

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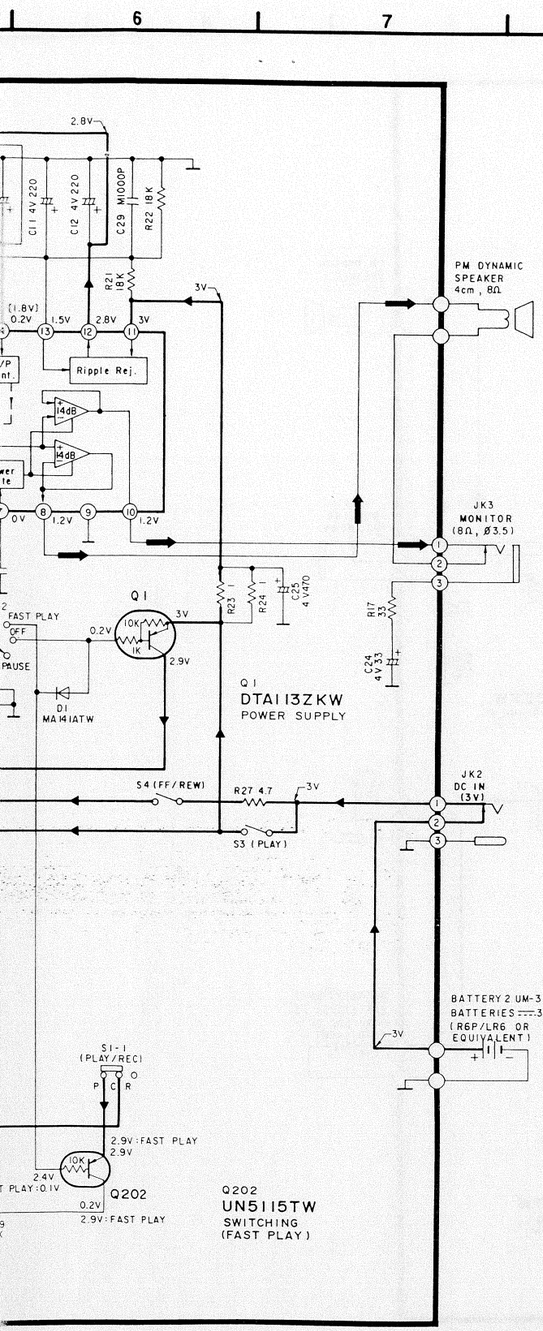
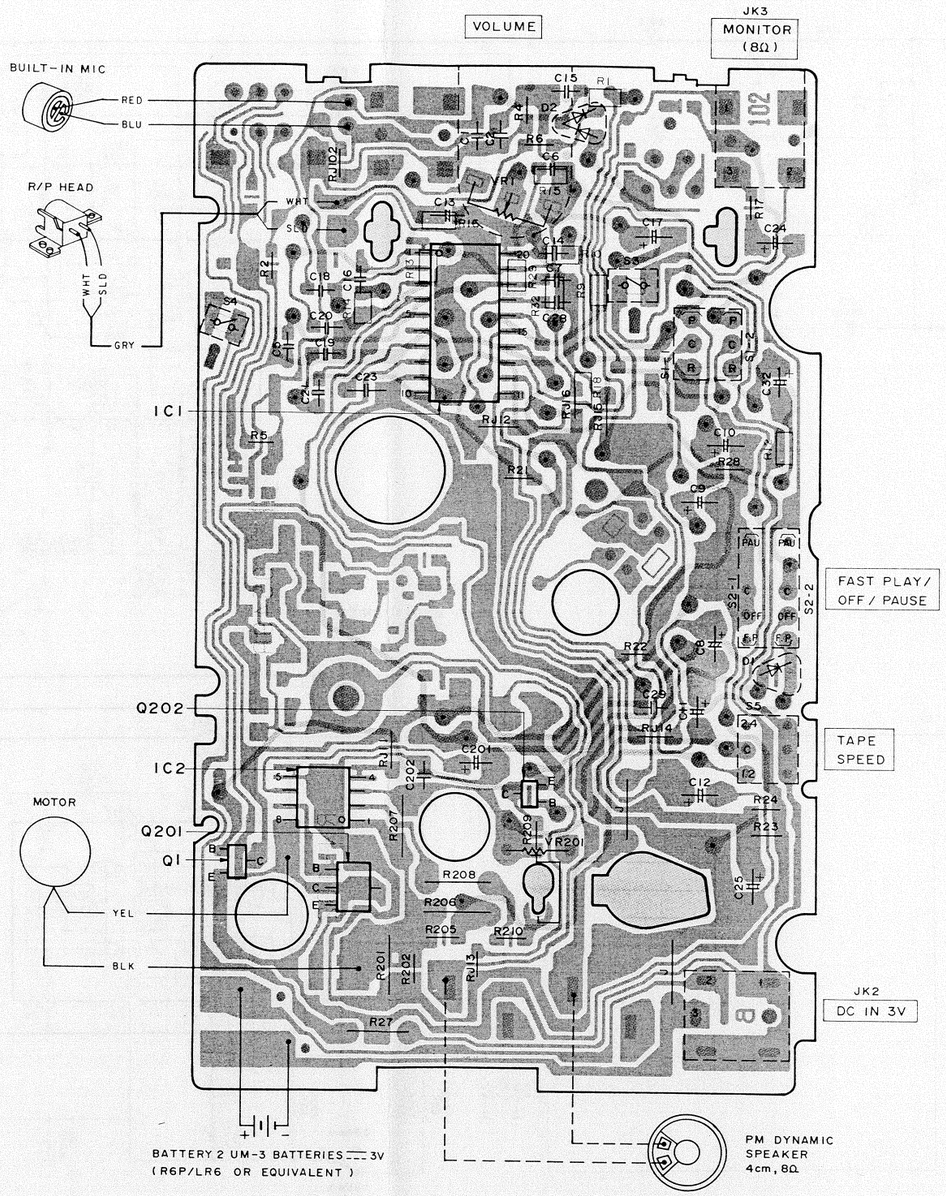
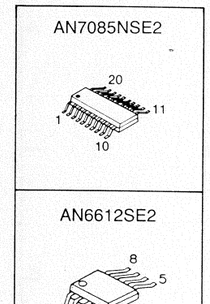
CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM







tery current: Playback .... 114 mA (Vol. min)
262 mA (Vol. max)
Record ..... 118 mA
ark: Printed Resistor

s schematic diagram may be modified at any time with development of new technology.

: Playback Signal Line
: Record Signal Line
: +B Line

Notes:
1. The symbols ( ) shown in the circuit board indicate printed resistor.
2. The circuit shown in ( ) on the conductor indicates printed circuit on the back side of the printed circuit board.
3. The circuit shown in ( ) on the conductor indicates printed circuit on the front side of the printed circuit board.
4. The symbols ( ) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.

•This circuit board diagram may be modified at any time with the development of new technology.

REPLACEMENT PARTS LIST

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC1	AN7085NSE2	I. C, PRE/POWER AMP	
IC2	AN6612SE2	I. C, MOTOR CONTROL	
		TRANSISTOR(S)	
Q1	DTA113ZKW	TRANSISTOR	
Q201	2SB1132RTX	TRANSISTOR	
Q202	UN5115TW	TRANSISTOR	
		DIODE(S)	
D1	MA141ATW	DIODE	
D2	MA153TX	DIODE	
		VARIABLE RESISTOR(S)	
VR1	EVLHCBA11B54	V. R, VOLUME	
VR201	EVND8KA03B53	V. R, TAPE SPEED	
		SWITCH(ES)	
S1	RSS2B71ZA-M	SW, R/P	
S2	ESD11H230	SW, FAST PLAY/PAUSE	
S3	RSH1A008-U	SW, PLAYBACK	
S4	RSH1A008-U	SW, FF/REW	
S5	ESD11H220	SW, TAPE SPEED	
		JACK(S)	
JK2	RJJB2ZA-C	JACK, DC IN	
JK3	RJJ32M01-1	JACK, MONITOR	

Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R2	ERJ6GEYJ152V	1/10W 1.5K
R4, 5	ERJ6GEYJ152V	1/10W 1.5K
R6	ERJ6GEYJ392V	1/10W 3.9K
R17	ERJ6GEYJ330V	1/10W 33
R21, 22	ERJ6GEYJ183V	1/10W 18K
R23, 24	ERJ6GEYK1R0V	1/10W 1.0
R27	ERDS2TJ4R7T	1/4W 4.7
R28	ERJ6GEYJ335V	1/10W 3.3M
R201	RRSA39JR50TH	1/8W 0.5
R202	ERJ6GEYJ2R7V	1/10W 2.7
R205	ERJ6GEYJ223V	1/10W 22K
R206	ERDS2TG222T	1/4W 2.2K
R207	ERDS2TG152T	1/4W 1.5K
R208	RRSA10J103TH	1/8W 10K
R209	ERJ6GEYJ154V	1/10W 150K
R210	ERJ6GEYJ182V	1/10W 1.8K
		CAPACITORS
C1	ECUV1E104ZFN	25V 0.1U
C2	ECUV1C224ZFN	16V 0.22U
C5	ECUV1E104ZFN	25V 0.1U
C6	ECUV1H562MBN	50V 5600P
C7	ECUV1E103MBN	25V 0.01U
C8, 9	ECEA1CKS100L	16V 10U
C10	ECEA0JKA220	6.3V 22U
C11, 12	ECEA0GKS221	4V 220U
C13	RCST1VY104LE	35V 0.1U
C14	ECUV1E103MBN	25V 0.01U
C15	ECUV1C224ZFN	16V 0.22U
C16	ECUV1H822MBN	H 50V 8200P
C17	ECEA1CKS100L	16V 10U
C18	ECUV1C224ZFN	16V 0.22U
C19	ECUV1H682MBN	H 50V 6800P
C20	ECUV1C105ZFN	H 16V 1U
C21	ECUV1E104ZFN	25V 0.1U
C23	ECUV1C474ZFM	16V 0.47U
C24	ECEA0GKS330L	4V 33U
C25	ECEA0GKS471I	4V 470U
C28, 29	ECUV1H102MBN	50V 1000P
C32	ECEA1CKS100L	16V 10U
C201	ECEA1EK3R3	25V 3.3U
C202	ECUV1E103MBN	25V 0.01U

Ref. No.	Part No.	Values & Remarks
		CHIP JUMPERS
RJ11, 12	ERJ8GEY0R00V	1/8W 0
RJ13	ERJ6GEY0R00V	1/10W 0
RJ14, 15	ERJ8GEY0R00V	1/8W 0
RJ16	ERJ6GEY0R00V	1/10W 0
RJ102	ERJ6GEY0R00V	1/10W 0

* Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

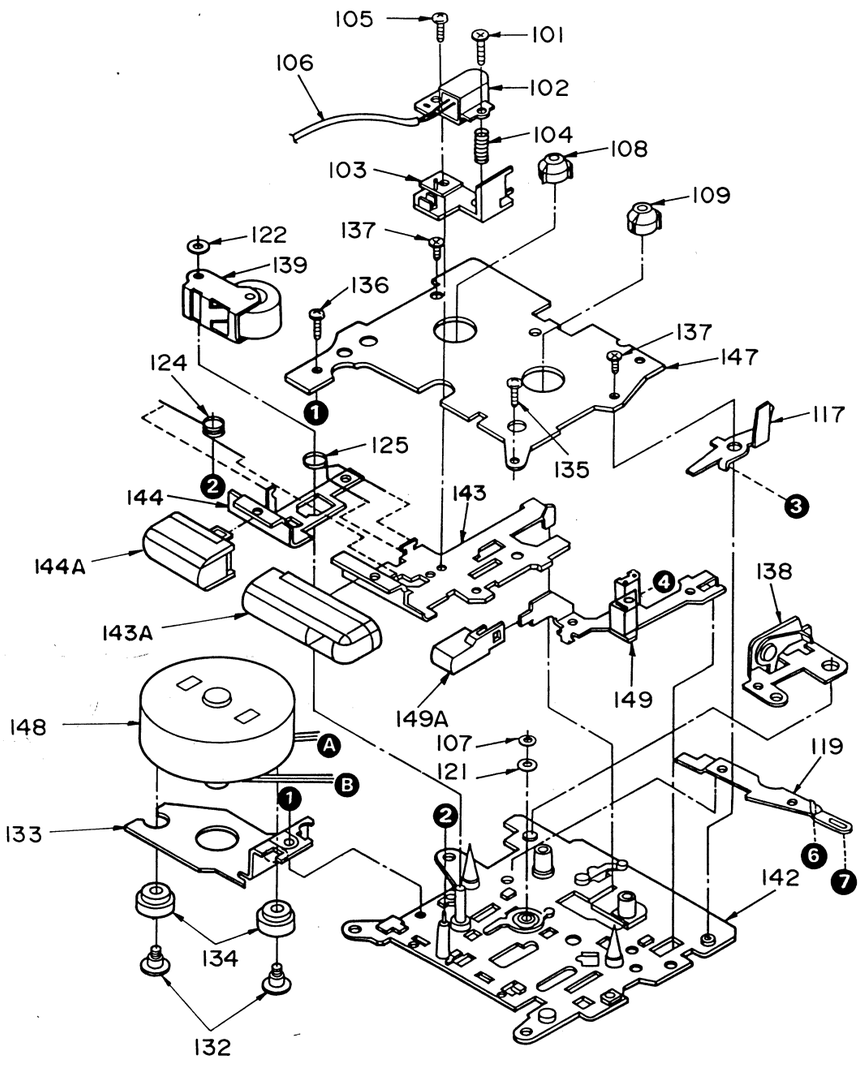
Part No.	Values & Remarks
	RESISTORS
MJ6GEYJ152V	1/10W 1.5K
RJ6GEYJ152V	1/10W 1.5K
RJ6GEYJ392V	1/10W 3.9K
J6GEYJ330V	1/10W 33
RJ6GEYJ183V	1/10W 18K
RJ6GEYK1R0V	1/10W 1.0
DS2TJ4R7T	1/4W 4.7
RJ6GEYJ335V	1/10W 3.3M
SA39JR50TH	1/8W 0.5
J6GEYJ2R7V	1/10W 2.7
RJ6GEYJ223V	1/10W 22K
DS2TG222T	1/4W 2.2K
RDS2TG152T	1/4W 1.5K
SA10J103TH	1/8W 10K
J6GEYJ154V	1/10W 150K
RJ6GEYJ182V	1/10W 1.8K
	CAPACITORS
UV1E104ZFN	25V 0.1U
CUV1C224ZFN	16V 0.22U
UV1E104ZFN	25V 0.1U
CUV1H562MBN	50V 5600P
CUV1E103MBN	25V 0.01U
CEA1CKS100L	16V 10U
FA0JKA220	6.3V 22U
CEA0GKS221	4V 220U
CST1VY104LE	35V 0.1U
CUV1E103MBN	25V 0.01U
CUV1C224ZFN	16V 0.22U
CUV1H822MBN	H 50V 8200P
CEA1CKS100L	16V 10U
CUV1C224ZFN	16V 0.22U
CUV1H682MBN	H 50V 6800P
CUV1C105ZFN	H 16V 1U
V1E104ZFN	25V 0.1U
CUV1C474ZFM	16V 0.47U
CEA0GKS330L	4V 33U
CEA0GKS471I	4V 470U
CUV1H102MBN	50V 1000P
CEA1CKS100L	16V 10U
CEA1EK3R3	25V 3.3U
CUV1E103MBN	25V 0.01U

Ref. No.	Part No.	Values & Remarks
		CHIP JUMPERS
RJ11, 12	ERJ8GEY0R00V	1/8W 0
RJ13	ERJ6GEY0R00V	1/10W 0
RJ14, 15	ERJ8GEY0R00V	1/8W 0
RJ16	ERJ6GEY0R00V	1/10W 0
RJ102	ERJ6GEY0R00V	1/10W 0

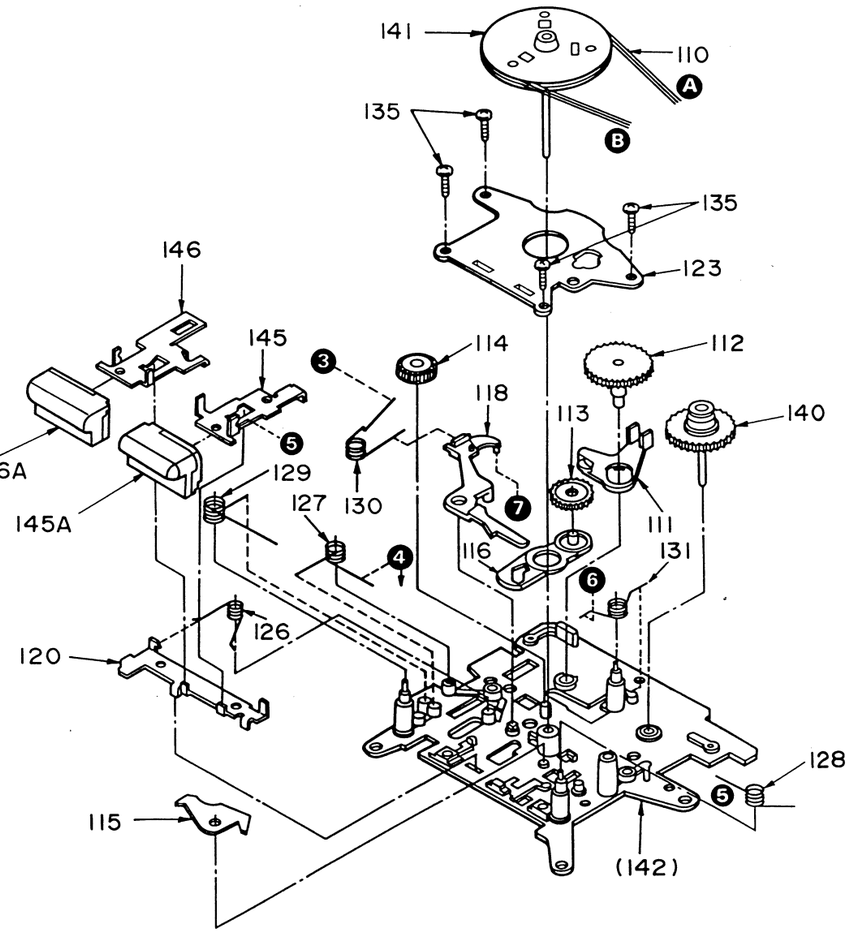
Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS	
101	RHE5191ZA	SCREW	
102	RJH0M04YZAS	R/P HEAD	
103	RMD5015ZB	HEAD BRACKET	
104	RUQ106ZA	SPRING	
105	XQN14+CM3	SCREW	
106	QZZ0308	SHIELD WIRE	
107	QBW2060	WASHER	
108	RDR141ZA	ROLLER	
109	RDR137ZA	ROLLER	
110	RDV101YA	BELT	
111	RML0156	LEVER	
112	RNG132ZA	GEAR	
113	RNG133ZB	GEAR	
114	RNG134ZA	GEAR	
115	RNL185ZA	LEVER	
116	RNL186ZA	LEVER	
117	RNL187ZC	LEVER	
118	RNL188ZA	LEVER	
119	RNL190ZA	LEVER	
120	RNR76ZB	ROD	
121	RNW110ZA	WASHER	
122	RNW164ZA	WASHER	
123	RUA841ZA	PLATE	
124	RUW184ZA	SPRING	
125	RUW185YA	SPRING	
126	RUW186YA	SPRING	
127	RUW187ZA	SPRING	
128	RUW188YA	SPRING	
129	RUW189ZB	SPRING	
130	RUW190YB	SPRING	
131	RUW191ZB	SPRING	
132	RFE366ZA	SCREW	
133	RMA0286	ANGLE	
134	RMG0186	RUBBER	
135	XQN14+C3FN	SCREW	
136	XQN16+CF3	SCREW	
137	XQS14+AQ3FZ	SCREW	
138	RFKRRAA0605A	EJECT ANGLE ASS'Y	
139	RFKRRAA0605B	PINCH ROLLER ASS'Y	
140	RFKRRAA0605C	REEL ASS'Y	
141	RFKRRAA0605D	FLYWHEEL ASS'Y	
142	RFKRRAA0605E	CHASSIS ASS'Y	
143	RFKRRAA0605F	ROD ASS'Y	
143A	RGU0448-K	BUTTON, PLAY	
144	RFKRRAA0605G	ROD ASS'Y	
144A	RGU0449-K	BUTTON, STOP/EJECT	
145	RFKRRAA0605H	ROD ASS'Y	
145A	RGU0450-K	BUTTON, FF	
146	RFKRRAA0605I	ROD ASS'Y	
146A	RGU0451-K	BUTTON, REW	
147	RFKRRAA0605J	PLATE ASS'Y	
148	RFKPRAA0605	MOTOR ASS'Y	
149	RFKRRAA0605K	ROD ASS'Y	
149A	RGU0452	BUTTON, REC	

MECHANISM PARTS LOCATION

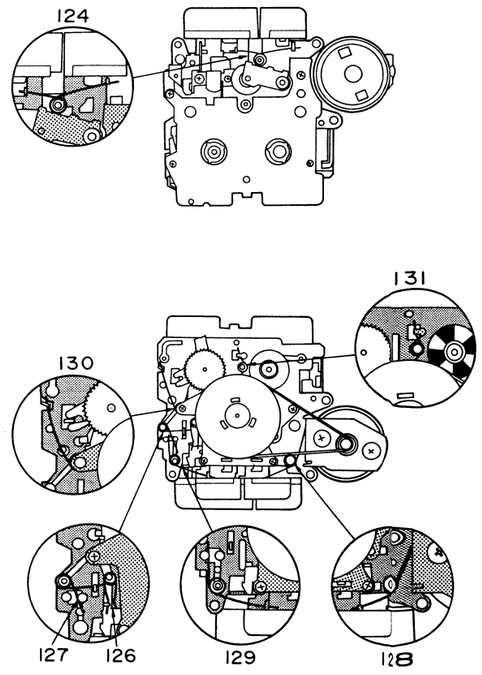
<FRONT VIEW>



<REAR VIEW>

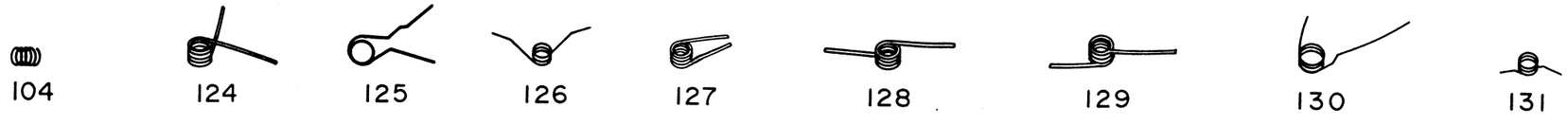


■ SPRING LOCATION



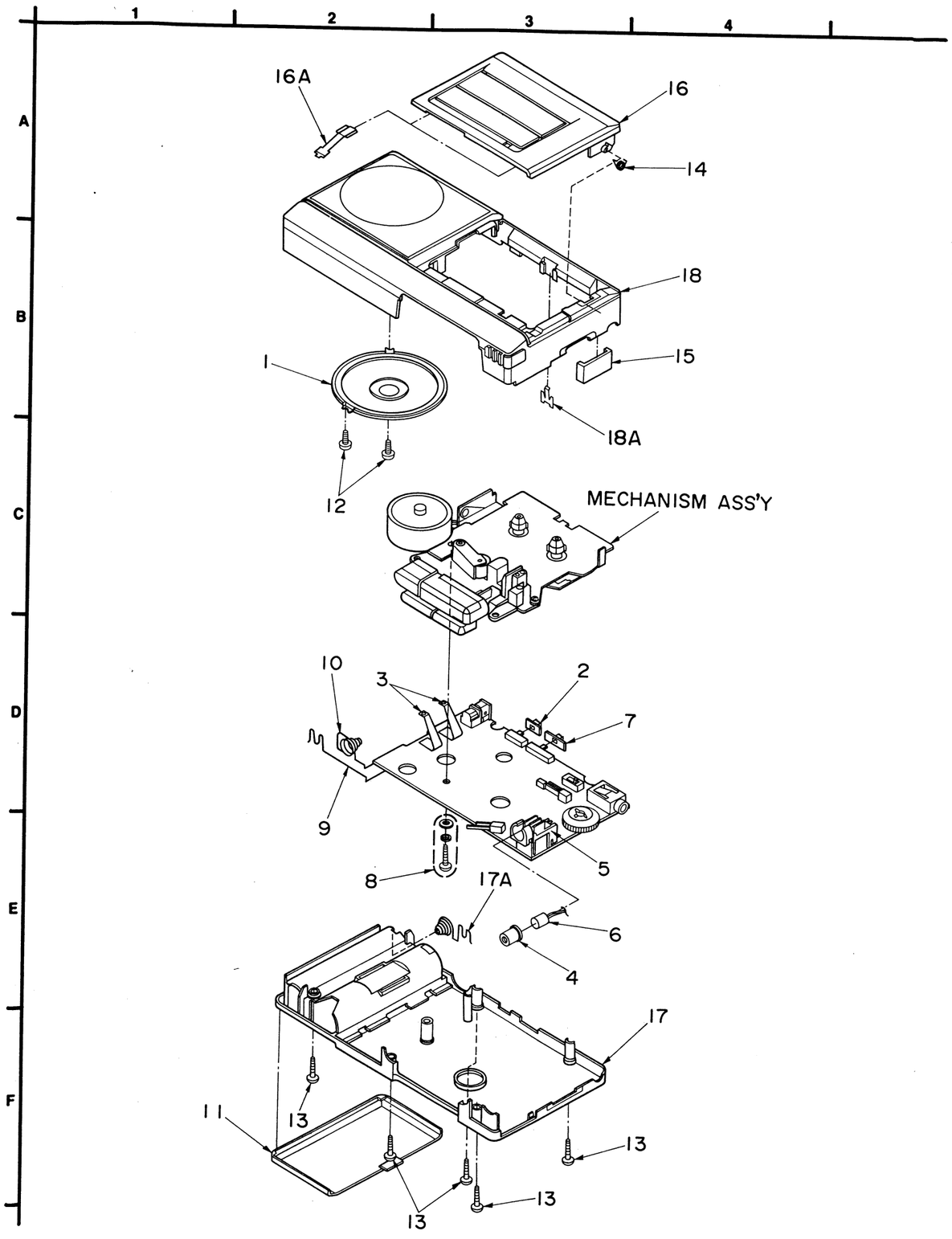
■ SPRING ILLUSTRATION

The illustration shows the actual size of the springs so it can be used to check their shapes.
(The illustration shows the springs separated from the mechanism.)



Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RAS4P02-M	SPEAKER	
2	RBD374ZA-0	KNOB, TAPE SPEED	
3	RJH5103	TERMINAL, SP	
4	RHG30712A	RUBBER	
5	RMR0373	HOLDER	
6	WM60AY	BUILT-IN MICROPHONE	
7	RGV0065-H	KNOB, VAS/PAUSE	
8	RHD20008	SCREW ASS'Y	
9	RJC30008	TERMINAL, BATT(+)	
10	RJC70009	TERMINAL, BATT(-)	
11	RKK0038-K	BATTERY COVER	
12	XQN2+CQ3	SCREW	
13	XTN2+14JFZ	SCREW	
14	RMB0170-1	SPRING	
15	RMR0361	CHASSIS	
16	RYF0108-K	CASSETTE LID ASS'Y	
16A	RMC0105	SPRING	
17	RYK0173-K	REAR CABINET	
17A	RJC93009	TERMINAL	
18	RFKGN102P-K	FRONT CABINET ASS'Y	
18A	RMC0104	SPRING	
		PACKING MATERIAL	
P1	RPN0417	BLISTER COVER	(E)
P2	RPN0418	BLISTER CASE	(E)
P3	RPQ0116	CARD	(E)
P4	RPK0204	GIFT BOX	(GC) (GN)
P5	RPN0104-1	PAD	(GC) (GN)
P6	XZB10X20A04	POLYETHYLENE COVER	(GC) (GN)
		ACCESSORIES	
A1	QFT20CDPY	TAPE	(E)
A2	RQT0886-E	INSTRUCTION MANUAL	(E)
A2	RQT0887-G	INSTRUCTION MANUAL	(GC)
A2	RQT0888-L	INSTRUCTION MANUAL	(GN)

CABINET PARTS LOCATION



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